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MARS TOGETHER 2001: AN INTERNATIONAL MISSION OF EXPLORATION

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The United States and Russia have demonstrated serious interests in Mars and are engaged in long-range exploration programs that include launches from each country in 1996. Both countries have conjectured that a more effective, scientifically rewarding program could be realized if their strengths were combined. Russia and the U.S. have been engaged in studies toward this goal since April 1994. Those studies have already borne fruit: Russia will participate in the science payloads of the U.S. Mars Surveyor 1998 missions by providing the optics for the Pressure Modulated Infrared Radiometer on the orbiter and a Lidar instrument on the lander. But beyond 1998, even more ambitious programs are contemplated. In 2001 the two countries are considering a joint mission launched on a Russian Molniya/Block-L launch vehicle that carries both a U.S. and a Russian spacecraft. In this arrangement, the U.S. and Russian elements would be joined together throughout the interplanetary cruise then separate en the approach to Mars. The Russian element is a Descent Module containing the Marsokhod rover. The descent module would be braked successively by an aeroshell, parachutes and airbags, then soft-lands a Marsokhod rover on the surface. The U.S. element launched on the Molniya is a cruise module. At the same opportunity, the U.S. intends to launch an orbiter which will be captured into Mars orbit using aerobraking. This orbiter will map the planet using Gamma-Ray Spectrometer, and possibly other instruments, thus completing the objectives of the failed Mars observer mission. The Marsokhod rover will conduct a year-long mission of extensive surface exploration, ranging over many kilometers. The U.S. orbiter would also serve as a high-capacity data return path for the rover. The Mars Together combination is expected to make a significant contribution to our knowledge of Mars. The paper will describe some of the aspects of the mission and flight system designs along with plans to implement this major international cooperative endeavor.